

d.) Remarks.

Claims 55-75 have been canceled. Claims 23-25, 38-40, 42, 44-47, 49, 52, 76, 77, 89, 91, 93, 95, 97, 98, 100 and 101 have been amended. Claims 104-122 have been added. Support for the amendments is found throughout the specification and original claims. For example, support for the amendments to claims 23, 24, 42, 44, 47, 49, 52, 76, 77, 93, 95, 98, 100 and 101 can be found on page 9 and in Table I on page 10 of the specification. No new matter has been added. Thus, claims 23-49 and 52-54 and 76-122 are currently pending.

Remarks Regarding 35 U.S.C. § 112, second paragraph.

Claims 24 and 77 stand rejected, under 35 U.S.C. § 112, second paragraph, as allegedly indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention citing as reason, “recited various aspect ratios such as a range within a range are indefinite.”

Applicant respectfully disagrees. Claims 24 and 77 have been examined eight times over the course of prosecution spanning three and a half years without being subject to a rejection under 35 U.S.C. § 112, second paragraph. Further, and in contrast to the Examiner’s comments in the Office Action, these claims do not cite a range within a range. The claims comprise a limitation that is selected from the group consisting of three different ranges. These are Markush claims, which are perfectly acceptable under the rules of the Manual of Patent Examining Procedure (see MPEP Sec. 2173.05{h}). This rejection is therefore in error and applicant respectfully requests that it be withdrawn.

Remarks Regarding 35 U.S.C. § 102(e) or, in the alternative, under 35 U.S.C. § 103(a).

A. Claims 23-36, 38-49, 52-54, 76-87 and 89-103 stand rejected, under 35 U.S.C. § 102(e) as allegedly anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as allegedly obvious over U.S. Patent No. 6,630,772 (“Bower”).

B. Claims 23-49, 52-54, and 76-103 stand rejected, under 35 U.S.C. § 103(a) as allegedly obvious over Bower in view of U.S. Patent No. 6,683,783 (“Smalley”).

Applicant respectfully traverses these rejections and all comments made in the Office Action, but responds to the Examiner's comments therein as follows.

Bower

37 C.F.R. § 1.131 recites, in part, that “[t]he effective date of a U.S. patent...is the earlier of its publication date or date that it is effective as a reference under 35 U.S.C. 102(e).” In this connection, Bower issued from Application No. 09/296,572, filed April 22, 1999, and takes priority from Provisional Application No. 60/101,203, filed September 21, 1998 (“the Bower Provisional”). The rejection presumes that Bower is effective as a prior art reference under 35 U.S.C. 102(e), as of September 21, 1998, which is the filing date of the Bower Provisional.

Applicants submitted a Declaration, under 37 C.F.R. § 1.131, by Paul J. Glatkowski on May 9, 2003. As indicated therein, a composite having nanotubes that provide the composite with electromagnetic shielding was conceived and reduced to practice prior to June 30, 1998, and therefore prior to the filing date of the Bower Provisional.

The Declaration included a copy of a Test Report which shows shielding effectiveness data between 20 kHz and 1.5 GHz on PET-1.5 wt.% nanotube composite plaques. This data was normalized for a thickness of 1 mm and is shown in Table 2. The required shielding effectiveness per MIL-STD-188-125A is 100 dB. However, Table 2 demonstrates a shielding effectiveness of 182 dB at a nanotubes loading level of only 1.5 wt.%, thus indicating that the composite clearly offers both electromagnetic shielding and low observability.

Applicants respectfully submit that the evidence set forth in the Declaration establishes reduction to practice prior to June 30, 1998, the effective date of the Bower Provisional.

Applicant's Rule 131 Declaration has been in the file for over 2 years and clearly establishes that Bower is not prior art to the claimed invention. Accordingly, these rejections are in error or moot and applicant respectfully requests that both be withdrawn.

C. Claims 23-49, 52-54, and 76-103 stand rejected, under 35 U.S.C. § 102(e) as allegedly anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as allegedly obvious

over U.S. Patent No. 6,683,783 (“Smalley”). Applicant respectfully traverses this rejection and all comments made in the Office Action, and responds to the Examiner’s comments as follows:

Smalley

In the Office Action, the Examiner states that it is Applicant’s opinion that carbon nanotubes aligned and oriented in a direction perpendicular to an electric field does not mean that the carbon nanotubes possess electromagnetic shielding properties. Further, the Examiner also states that it would be impossible to use impregnation method with carbon nanotubes. The Examiner’s statement is incorrect and, more importantly, has nothing to do with Smalley or this rejection. If the Examiner wishes to establish additional information for the record, Applicant respectfully request that this information be provided from a publication or Examiner’s Affidavit, and made of record in this case, with a clear and concise statement of the rejection. In the absence of that information or a clear statement of the rejection, applicant respectfully requests that this rejection be withdrawn as improper or in error. Nevertheless, in an effort to expedite prosecution of this case, applicant provides the following remarks.

Nowhere in Smalley or in the Examiner’s comments is any connection made between electromagnetic shielding and the properties of aspect ratio, orientation or alignment. Nowhere in Smalley are these properties disclosed, discussed or suggested. Applicant respectfully asserts that electromagnetic shielding is not an inherent property of carbon nanotubes, nor is it a “necessary function” of carbon nanotube containing composites. Mere speculation that carbon nanotubes may be used with RF shielding does not anticipate or suggest the experimentation necessary to form a composite with EMI shielding. Only after deliberate experimentation to achieve the specific combination of aspect ratio, orientation and/or alignment of the carbon nanotubes as claimed can formation of a composite result in EMI shielding and/or low observability.

None of the comments in the Office Action are directed to Applicant’s “claimed” invention. No connection whatsoever is made between orientation, alignment or aspect ration of the nanotubes themselves with any disclosures in Smalley. Accordingly, the rejection of

claims 23-49, 52-54 and 76-103, under 35 U.S.C. § 102(e), is in error and Applicant respectfully requests that it be withdrawn.

Remarks Regarding Interview Summary

Applicant thanks Examiner Yoon for his time during an Examiner Interview on January 31, 2006. Applicant discussed the Office Action and all references that were cited in that Action. The following represents a brief summary of that interview.

First, the undersigned discussed the Markush claims in relation to the rejection under 35 U.S.C. § 112, second paragraph. Examiner Yoon admitted that claims 24 and 77 were indeed Markush claims and, therefore acceptable, but requested that applicant provide separate claims for each range. Solely to comply with the Examiner's request, applicant has amended claims 24 and 77, and added new claims 104-107.

Applicant also discussed the Bower and Smalley references. With regard to Bower, Examiner Yoon stated that he did not realize that Applicant had submitted a Rule 131 Declaration, but that, in view of the Declaration, Bower could not be considered prior art and rejections relating to Bower would be withdrawn. Examiner Yoon also agreed that Smalley did not suggest applicant's claimed invention and that this rejection would also be withdrawn.

However, in discussing the claims, Examiner Yoon stated that he believed all materials had some ability to shield against electromagnetic radiation and that this distinction was not present in the claims. Thus, the claims may be subject to another non-final Office Action. Although no rejections were pending, the undersigned agreed to consider further amendments to the claims provided that applicant would not receive a final Office Action. Examiner Yoon kindly agreed to consider any and all options that applicant may wish to propose. Accordingly, Applicant has added new claims 108-122 and amended the following claims as follows:

Claim 23 is amended to recite that the shielding effectiveness is enhanced at least 5 dB as compared to a composite comprising only PET.

Claim 42 is amended to recite that the shielding effectiveness is enhanced at least 5 dB as compared to a composite comprising an equivalent amount of carbon nanotubes that

are substantially not in contact with each other, or are not aligned or oriented to provide electromagnetic shielding.

Claim 44 is amended to recite that the shielding effectiveness is enhanced at least 5 dB as compared to a composite comprising PET.

Claim 47 is amended to recite that the shielding effectiveness is enhanced at least 5 dB as compared to a control composite.

Claim 49 is amended to recite that the shielding effectiveness is enhanced at least 5 dB as compared to a control composite consisting of PET.

Claim 52 is amended to recite that the shielding effectiveness is enhanced at least 5 dB as compared to a composite comprising carbon nanotubes that are not effectively oriented and aligned.

Claim 76 is amended to recite that the shielding effectiveness is enhanced at least 5 dB as compared to a composite comprising only PET.

Claim 93 is amended to recite that the shielding effectiveness is enhanced at least 5 dB as compared to a control composite comprising only PET.

Claim 95 is amended to recite that the shielding effectiveness is enhanced at least 5 dB as compared to a control composite consisting of PET.

Claim 98 is amended to recite that the shielding effectiveness is enhanced at least 5 dB as compared to a control composite that does not generate heat upon exposure to electromagnetic radiation.

Claim 100 is amended to recite that the shielding effectiveness is enhanced at least 5 dB as compared to a control composite comprising only PET.

Claim 101 is amended to recite that the shielding effectiveness is enhanced at least 5 dB as compared to a control composite comprising neat PET.

Conclusion

In view of the foregoing remarks, reconsideration of the application and issuance of a Notice of Allowance is respectfully requested.

If there are any issues remaining which the Examiner believes could be resolved through either a Supplemental Response or an Examiner's Amendment, the Examiner is respectfully requested to contact the undersigned at the number below.

Should additional fees be necessary in connection with the filing of this Responsive Amendment, or if a petition for extension of time is required for timely acceptance of same, the Commissioner is hereby authorized to charge **Deposit Account No. 14-1437 for any such fees, referencing Attorney Docket No. 143990.00101**; and applicant hereby petitions for any needed extension of time not otherwise accounted for with this submission.

Respectfully submitted,
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By

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